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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,803	11/21/2003	Himanshu Pokharna	42P17130	3345

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EXAMINER

EDWARDS, ANTHONY Q

ART UNIT PAPER NUMBER

2835

DATE MAILED: 12/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/719,803

Applicant(s)

POKHARNA ET AL.

Examiner

Anthony Q. Edwards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 4-6, 9, 14, 15, 17 and 19-24 rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,510,052 to Ishikawa et al. ("Ishikawa" hereinafter). Referring to claim 1, Ishikawa discloses a notebook computer system (see Fig. 1), comprising a first heat sink (32) to passively dissipate heat from the notebook computer system, and a second heat sink (71) coupled to the first heat sink, wherein the second heat sink is enabled if the notebook computer system detects that a component of the notebook computer system exceeds a predefined temperature threshold. See Figs. 3, 11 and 12, as well as col. 12, lines 57-65.

Referring to claim 4, Ishikawa discloses a notebook computer system, wherein the first heat sink (32) passively dissipates heat through a display (3). See col. 12, lines 37-44.

Referring to claims 5 and 6, Ishikawa discloses a notebook computer system, wherein the display (3) comprises a first plate (43a) coupled to a second plate (43b), wherein a working fluid for heat transfer is distributed across the surface area of the display through grooves (45) between the first plate and the second plate, and wherein the grooves (45) between the first plate and second plate has a plurality of turns (44) to improve temperature spreading, respectively. See Fig. 3 and col. 12, lines 37-41.

Referring to claim 9, Ishikawa discloses method comprising dissipating heat from a notebook computer system through a display (3) of a notebook computer system, and dissipating heat from the notebook computer system by using a fan (90) to remove heat from a heat exchanger (71). See Figs. 3 and 11, as well as col. 10, lines 63-67.

Referring to claim 14, Ishikawa discloses method, wherein the display (3) comprises a screen (18), inherently compromises circuitry, and a cover (57), wherein heat passively dissipates through the display cover. See col. 12, lines 45-50.

Referring to claim 15, Ishikawa discloses a thermal management system of a notebook computer system, comprising a heat generating component (12), an evaporator (77) coupled to the component to remove heat from the component, wherein the heat is transported via a working fluid, and a pump (76) coupled to the evaporator to transport the working fluid from the evaporator (77) to a heat exchanger (31), wherein a fan (90) removes heat from the working fluid in the heat exchanger, and a display (3) coupled to the evaporator (77), wherein the working fluid is spread across the surface area of the display to dissipate heat. See Figs. 3 and 11, as well as col. 11, lines 1-53.

Referring to claim 17, Ishikawa discloses a thermal management system, further comprising a hinge (52) to transfer the working fluid from the heat exchanger to the display, wherein the hinge comprises flexible tubing. See Fig. 4 and col. 9, lines 57-62.

Referring to claim 19, Ishikawa discloses a thermal management system, wherein the working fluid comprises water. See col. 9, lines 53-56.

Referring to claim 20, Ishikawa discloses a thermal management system, comprising means for cooling a notebook computer passively (32), and means for cooling the notebook

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computer system actively if a component (12) of the computer system exceeds a threshold temperature. See Figs 3, 11 and 12, as well as col. 12, lines 57-65.

Referring to claim 21, Ishikawa discloses a thermal management system, further comprising means for detecting a temperature of the notebook computer system. See col. 12, lines 3-15.

Referring to claim 22, Ishikawa inherently discloses a thermal management system, further comprising means for increasing a life of a battery of the notebook computer system, since the fan control according to Fig. 12 would increase the life of the battery.

Referring to claim 23, Ishikawa inherently discloses a thermal management system, further comprising means for spreading a working fluid temperature across a display (3) of the notebook computer system. See col. 12, lines 37-44.

Referring to claim 24, Ishikawa inherently discloses a thermal management system, further comprising means for pumping (76) a working fluid through the notebook computer system. See col. 11, lines 11-53.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa. Referring to claims 2 and 16, Ishikawa discloses the notebook computer system as

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claimed, except for the first heat sink dissipating approximately 2-20 watts of power. It is not inventive to discover the optimum or workable ranges by routine experiment (see MPEP 2144.05; *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)).

It would have been obvious to one of ordinary skill in the art at the time of the invention to limit the amount of heat dissipated from the first heat sink of Ishikawa to within 2-20 watts of power, since the monitoring and controlling the amount of heat dissipated from the first heat sink provides a benchmark for monitoring and controlling the thermal management of the entire system.

Referring to claim 7, Ishikawa discloses the notebook computer system as claimed, except for both the first and the second plates being approximately one millimeter thick. It has been held that “in considering the disclosure of the reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom” (see MPEP 2144.01; *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968)).

It would have been obvious to one of ordinary skill in the art at the time of the invention to make both the first and second plates of Ishikawa approximately one millimeter thick, since such thin plates (e.g., approximately one millimeter thick) would provide sufficient structural support for the circulating paths or grooves of the heat sink in the display, and also provide said structure in a light weight form.

Claims 3 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa in view of U.S. Patent Application Publication No. US2004/0095721 to Ellsworth, Jr. et al. (“Ellsworth” hereinafter). Referring to claim 3, Ishikawa discloses the invention as

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claimed, except for the second heat sink being enabled if the notebook computer system exceeds a predefined power consumption threshold. Ellsworth teaches providing an auxiliary heat removal system (210) or (310), which is enabled when predefined power consumption of a heat source (240) is reached. See Fig. 2 and paragraph 0032, second column of the page 3.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the system of Ishikawa with a heat sink or heat removal system that is enabled when predefined power consumption of a component is reached, as taught by Ellsworth, since the device of Ellsworth would increase the coefficient of performance of the cooling system of Ishikawa by simply monitoring both the power and the temperature output of the heat producing component.

Referring to claim 10, Ishikawa in view of Ellsworth disclose a method further comprising monitoring a power consumption of a central processing unit. See col. 7, lines 36-38 of Ishikawa.

Referring to claim 11, Ishikawa in view of Ellsworth disclose a method further comprising disabling the fan (310) if the power consumption of the CPU is less than a predefined power threshold. See Fig. 2 and paragraph 0032, second column of the page 3 of Ellsworth.

Referring to claim 12, Ishikawa in view of Ellsworth disclose a method further comprising monitoring the display temperature. See Fig. 12 of Ishikawa.

Referring to claim 13, Ishikawa in view of Ellsworth disclose a method further comprising enabling the fan if the display temperature is greater than a predefined temperature threshold. See Fig. 12 of Ishikawa.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa in view of U.S. Patent No. 6,181,555 to Haley et al. Ishikawa discloses the invention as claimed, except for further comprising an insulation layer to protect display circuitry from heat emanating from the first plate and the second plate. Haley et al. teach providing an insulation layer (102), between an LCD panel (101) and a thermo-plate or heat sink (104) to protect display circuitry in the LCD panel (101). See Fig. 2 and col. 3, lines 12-20 of Haley et al.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the notebook computer system of Ishikawa with an insulation layer, between the LCD panel and the combined first sink, as taught by Haley et al., since the device of Haley et al. would provide protection for sensitive components in the display of Ishikawa against heat dissipating from the portion of the first heat sink facing the display.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa in view of U.S. Patent No. 4,688,147 to Ono. Ishikawa discloses the invention as claimed, except for wherein the hinge comprises metal tubing to provide a hermetic seal. Ono teaches providing a flexible tube for a cooling device, having both an exterior metal bellows (5) and an interior surface wall 6c. See Fig. 3, as well as col. 3, lines 9-20.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the hinge having flexible tubing of Ishikawa to include an exterior metal bellows, as taught by Ono, since the device of Ono would provide the hinge of Ishikawa with an exterior surface that prolongs the lifespan of the hinge, and also provides for an hermetic seal in case the flexible tubing degrades prematurely.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Q. Edwards whose telephone number is 571-272-2042. The examiner can normally be reached on M-F (7:30-3:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on 571-272-2800, ext. 35. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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